CS 447-002 Networks and Data Communications
Spring 2024
Quiz #9 on April 10, 2024 (SOLUTIONS)

Your Last Three Digits: _____
(please do NOT write all of your student ID or your name)

Grade: _____

****

(1) How many Class-C domain(s) are (is) equivalent to a domain with '/25' CIDR (block) prefix (in terms of the number of the host computers)? <u>Show your work for fill credit</u>.

CIDR Block PreFix	# Equivalent Class-C	# of Host Addresses
/27		
/26		
/25		
/24		
/17		
/16		
/15		
/14		

The number of the host computers in a Class-C domain = $2^{(32-24)} = 2^8$

The number of the host computers in a '/25' domain = $2^{(32-25)} = 2^7$

Each '/26' domain = $2^7/2^8$ Class-C domain = <u>1/2 Class-C domain</u>

(2) What information does "Membership" field in each BGP UPDATE carries (explain why it is necessary in "BGP UPDATE")?

"Membership" field in each BGP UPDATE carries <u>a domain address</u> of a specific destination network domain.

(3) What is "default gateway"?

Default gateway is the gateway router host computers in a network domain are supposed to send their outgoing packets (those IP packets that are destined to any network domains over the Internet).

(4) The tier-1 ISPs are different from any other ISPs (those in tier-2 and tier-3). How (what is the most essential difference)?

The tier-1 ISPs are those ISPs that do not pay to any other ISPs (the only "settlement-free" ISPs).

(5) What is the relationship between "ISP" and "AS"?

An ISP can consist of multiple ASs, while an AS always belongs to only one ISP.